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Pollution Prevention: Making Sustainability a Reality

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**2003 Pollution Prevention Annual Report for the
Environmental Science and Services Division of the Michigan Department of Environmental Quality**

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www.michigan.gov/deq



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Introduction

The Michigan Department of Environmental Quality (DEQ) administers the pollution prevention (P2) assistance and services programs pursuant to Parts 143 and 145 of Public Act 451, the Natural Resources and Environmental Protection Act (NREPA) of 1994, as amended. This legislation, which was originally authorized in 1987, and amended under Act No. 289, Public Acts of 1998, entrusts the DEQ with responsibility for:

- Incorporating P2 goals within DEQ's regulatory and permit programs,
- Informing and educating to encourage reductions in the generation of environmental wastes, and
- Providing technical and financial assistance to small businesses and institutions to facilitate in-plant P2.

The DEQ's Environmental Science and Services Division's (ESSD) P2 programs carry out the legislative requirements of Parts 143 and 145 and partner with businesses, institutions, local government, trade associations, universities, DEQ staff, and state government to fulfill this responsibility.

Concurrent with managing the P2 programs, ESSD staff provides P2 coverage to all DEQ district offices. The deployment of field staff furthers the Department's goal of building P2 capacity to meet local needs. To increase the adoption of P2 practices, field staff, in coordination with DEQ regulatory staff, serve as a resource to watershed groups, lakewide management groups, and local sustainable business forums in the development of web sites, interactive compact discs, and publications.

The ESSD also develops and delivers environmental training through workshops and conferences. These events are conducted statewide to keep both the regulated and non-regulated communities up to date on regulatory requirements, P2 ideas, compliance assistance opportunities, new technologies, and other areas of interest. One such event was the 10th Annual Waste Reduction and Energy Efficiency Conference and Expo. Nearly 500 manufacturers, automobile suppliers, small- and medium-sized businesses, and community members heard presentations about sustainability and the integration of people, profits, and the environment.

A growing area of environmental interest is the concept of sustainability. P2 is an essential component of sustainability. Sustainability has been described as a symbol, as an ethic, and as a process to achieve balance between environmental, economic, and social needs. It is not a static condition but consists of constant adaptations to an ever-changing environment. It is dynamic and directional in terms of local values and community resources and, as such, offers multiple opportunities for government policies and programs.

This report summarizes the DEQ's major P2 activities and accomplishments in fiscal year 2003 (October 1, 2002, through September 30, 2003). As you read through the accomplishments for 2003, consider how P2 activities not only achieved reductions in pollution, but also how they foster and promote sustainable behavior. Perhaps you might consider participating locally to influence community decision-making to effectively balance environmental, economic, and social needs.



"As we evolve from the concept of pollution prevention to sustainability, it is imperative that the DEQ continue to practice environmental stewardship through our words and actions and consistently affirm that a healthy environment is critical to our social, cultural, and economic well-being. Toward that end, the DEQ will continue to develop and implement policies and programs that forward the concepts of sustainability both within state government and the private sector."

— Steven E. Chester, Director
Michigan Department of
Environmental Quality

Pollution Prevention:

POLLUTION PREVENTION PROGRAMS AND INITIATIVES

Agriculture Pollution Prevention

The Agriculture Pollution Prevention Program (AgP2) partnership between the Department of Environmental Quality and the Department of Agriculture promotes reduction or elimination of environmental contamination in agriculture. Guided by the Michigan AgP2 Strategy, which has been in place since 1998, the program focuses on preventing agricultural pollution through increased operational efficiency while maintaining and improving on-farm profitability.

The initiatives undertaken in fiscal year 2003, in accordance with the AgP2 Strategy, include:

- Sixteen livestock farms completed the Michigan Agriculture Environmental Assurance Program. Additional initiatives have begun with assistance to food processing and agricultural commodity organizations to assess and implement pollution prevention (P2) opportunities. Through the Community P2 Grants Program, a project was also funded to reduce biological oxygen demand and nutrient levels in wastewater generated at food processing plants.
- Michigan Custom Manure Applicators joined forces with Wisconsin and a few other Great Lakes states to develop a voluntary, proactive, certification program. This three-phase certification program will include education and training and end with the development and implementation of an environmental management system.
- The Saginaw Bay Watershed Initiative is a local partnership that enhances the quality of life by creating regional networks of on-the-ground projects that demonstrate sustainability. These projects strive to link together various economic, environmental, and community goals. One of the regional networks is the Agriculture/Pollution Prevention Task Group. This network focuses on supporting over 20 related projects ranging from Scientific Irrigation Scheduling to Organic Education and Advancement, Building Skill in Forage and Pasture Management, and Integrated Cropping Systems.



Windrow composting is used to aerate compost on this west Michigan dairy farm.

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For additional information visit www.michigan.gov/deq, select Pollution Prevention, Business Partnerships, and Agriculture.

Agriculture Pollution Prevention Partners include:

Michigan Agriculture Environmental Assurance Program (MAEAP)

- Michigan Department of Agriculture
- Individual Farmers
- Michigan Pork Producers Association
- Michigan United Conservation Clubs
- Michigan Corn Growers Association
- Michigan Association of Conservation Districts
- USDA Natural Resources Conservation Service
- Michigan Cattlemen's Association
- Michigan Farm Bureau
- Michigan State University - Extension

Food Processing Initiative

- Michigan Food Processors Association
- County Health Department

Michigan Custom Manure Applicators Association

- Michigan State University - Extension
- Applicators

Saginaw Bay WIN AgP2 Task Group

- Individual Farmers
- Michigan Department of Agriculture
- Saginaw Bay Resource Conservation & Development (RC&D)
- Saginaw Valley State University
- Michigan State University - Extension
- Dow Gardens
- Citizens
- Conservation Districts
- Conservation Fund
- The Nature Conservancy

Michigan State University Extension – Genesee County

Michigan Integrated Food and Farming Systems

Michigan Agriculture Stewardship Association

Rural Partners of Michigan

Pollution Prevention:

Clean Corporate Citizen Program



Clean Corporate Citizens celebrate their success by hosting a recognition ceremony.

The Clean Corporate Citizen (C3) Program provides public recognition and certain regulatory benefits for companies, municipalities, and institutions that have demonstrated environmental stewardship and a strong environmental ethic. Strong business performance and effective environmental management are integral partners in today's competitive world. The State of Michigan is a proactive leader in these efforts with their C3 Program which is based on an international Environmental Management System (EMS) framework. To qualify for the Michigan C3 Program, applicants must have: (1) an EMS in place; (2) a good compliance history (criteria has been written in Administrative Rule R324.1501 through 324.1511); and (3) a proactive pollution prevention (P2) program.

The C3 Program continues to perform as one of the nation's most successful environmental incentive programs. This fiscal year, many new facilities joined the group of elite environmental performers, bringing the program total to 75 participants (through August 31st). The trend this year saw multiple corporate sites (ADAC Plastics; General Motors; Keykert USA, Inc.; Cascade Engineering; Visteon Corporation; and Demmer Corporation) and an expanded variety of industry sectors interested in the program, including IMCO Aluminum Recycling; Elm Plating; Atlas Technologies; and Clytec, L.L.C.

Workshops and presentations have helped build interest in both EMS and the C3 Program. Rapid expansion of the program can be attributed to a greater understanding of the value of implementing an EMS and the associated benefits realized by this implementation. Through proactive management and daily consideration of environmental factors, many participants are able to reduce waste, reduce energy use, save money, and initiate new procedures like product take-backs and chemical substitutions. Increased publicity due to the C3 Program has benefited small, medium, and large businesses alike.

The ultimate goal of the C3 Program is to provide long-term benefits to Michigan's environment. An increase in responsible environmental management and active P2 results in reduced pollution of air, water, and soils. Each year designated C3's reevaluate their objectives and targets to seek continual

Making Sustainability a Reality

improvement. Many long-term participants have already picked the “low hanging fruit” at their site and are now making commitments to mentor other potential C3’s and fostering proactive projects within their local communities. These elite performers are leaders in our state’s environmental arena.

For additional information visit www.michigan.gov/deq, select Assistance & Support Services, Environmental Incentives, and Clean Corporate Citizen.

C3 Members are:

- ADAC Automotive Trim - Grand Rapids
- ADAC Automotive Trim - Saranac Plant
- ADAC Door Components - 32nd Street Plant, Grand Rapids
- ADAC Door Components - Keating Avenue Plant, Muskegon
- ADAC Door Components - Port City Plant, Muskegon
- Alpena Compressor Station Michigan
- Consolidated Gas Company (MICHCON) - Harrison
- ARVCO Containers - Kalamazoo
- Atlas Technologies Inc. - Fenton
- Baker Furniture - Holland
- Cascade Engineering - Grand Rapids
- Cascade Engineering Acoustics Group - Grand Rapids
- Collins & Aikman Corporation - Westland
- Collins & Aikman Manchester Operations - Manchester
- Consumers Energy - Parnall Road Office Complex - Jackson
- Consumers Energy - J. R. Whiting Plant - Erie
- Cyltec, L.L.C. - Tecumseh
- DaimlerChrysler Corporation - Sterling Heights Assembly Plant - Sterling Heights
- Dapco Industries - Dexter
- Dearborn Mid-West Conveyor - Taylor
- Delphi-E Grand Rapids - Grand Rapids
- Demmer Corporation - Delta Plant - Delta Township
- Denso Manufacturing - Michigan Inc. - Battle Creek
- Detroit Edison/DTE Energy - Fermi 2 Power Plant -Newport
- DeWitt Barrels, Incorporated - Grand Rapids
- DuPont Mount Clemens Plant - Mount Clemens
- Eaton Corporation - Saginaw
- Elm Plating Company - Jackson
- Ford Motor Company - Automotive Transmission New Product Center (ATNPC) - Livonia
- Ford Motor Company - Engine Manufacturing Development Operations (EMDO) - Allen Park
- Ford Motor Company - Livonia Transmission - Livonia
- Ford Motor Company - Romeo Engine - Romeo
- Ford Motor Company - Van Dyke Plant - Sterling Heights
- General Motors Lansing Regional Stamping Plant - Lansing
- General Motors Orion Assembly Center - Lake Orion
- General Motors Pontiac Centerpoint Campus Validation Center - Pontiac
- General Motors Powertrain -Livonia Engine Plant - Livonia
- General Motors Powertrain - Warren Transmission Plant - Warren
- General Motors - Romulus Engine Plant - Romulus
- Grayling Generating Station - Grayling

Pollution Prevention:

- Great Lakes Gas - Compressor Station #10 - Naubinway
- Great Lakes Gas - Compressor Station #10A - Brevort
- Great Lakes Gas - Compressor Station #11 - Boyne Falls
- Great Lakes Gas - Compressor Station #12 -Farwell
- Great Lakes Gas - Compressor Station #7 -Wakefield
- Great Lakes Gas - Compressor Station #8 - Crystal Falls
- Great Lakes Gas - Compressor Station #9 - Rapid River
- Great Lakes Gas - Compressor Station #13 - Otisville
- Great Lakes Gas - Deward Metering Station - Frederic
- Great Lakes Gas - Sault Ste. Marie Metering Station - Sault Ste. Marie
- Great Lakes Gas - St. Clair Metering Station - St. Clair
- Imco Recycling Inc. - Saginaw
- Inalfa/SSI Roof Systems - Warren
- Keykert USA, Inc. - Webberville - Webberville
- Keykert USA, Inc. - Wixom - Wixom
- Knoll, Incorporated - Grand Rapids Manufacturing - Grand Rapids
- LDM Technologies, Inc. - St. Clair Plant
- March Coatings Inc.-Plant 1 - Brighton
- March Coatings Inc.-Plant 2 - Brighton
- Mark IV Automotive Big Rapids Facility - Big Rapids
- Modern Plastics Corporation - Benton Harbor
- North Star Print Group - Norway
- Palmer Engineering, Inc. - Lansing
- Pfizer Global Research and Development - Ann Arbor
- Quality MetalCraft, Inc. - Livonia
- Smurfit-Stone Container Corp. Ontonagon Mill - Ontonagon
- T.E.S. Filer City Station - Filer City
- TAC Manufacturing - Jackson
- TRW Automotive - Fowlerville
- Uni Boring Company - Howell
- Unified Industries Inc. - Howell
- Visteon Automotive Systems - Chesterfield Trim Plant - Chesterfield
- Visteon Automotive Systems - Sheldon Road Plant - Plymouth
- Visteon Automotive Systems - Utica Plant - Utica
- Visteon Corporation - Milan Plant - Milan
- Visteon Corporation - Ypsilanti Plant - Ypsilanti

Making Sustainability a Reality

Community Pollution Prevention Grant Program

The Community Pollution Prevention (P2) Grant Program provides matching funds to local governments, businesses, planning agencies, and residents that partner to achieve measurable waste reductions through community-based P2 projects.

The goal of the Community P2 Grant Program is to foster partnerships and sustainability in communities by bringing local governments, businesses, planning agencies, and residents together to create change through P2. The program is funded by appropriations from unclaimed beverage container deposits.

Through a grant awarded to District #10 Health Department in Oceana County, the Environmental Science and Services Division is providing engineering and technical assistance to food processors in Oceana and Newaygo Counties. The goal of the project is to assist food processors in the evaluation of possible alternative technologies to implement P2 and energy and water conservation.

The City of Kalamazoo's "bio-solids team" has begun work with a marketing firm to produce a marketing strategy and public communications program to promote the beneficial use of dry, Class A bio-solids. In support of the marketing and communication program, Kalamazoo is testing soil, water, and plant tissue from four one-acre agricultural test plots for this growing season.

Finally, the Macomb County Health Services Division is offering an enhanced recycling program which includes fluorescent light tubes (containing mercury) and waste motor oil filters (oil and grease) from homeowners and fluorescent light tubes from small business. An incentive program will be offered at local retail sources for homeowners to receive reduced mercury content light tubes at a discount rate.

For additional information visit www.michigan.gov/deq, select Assistance & Support Services, Financial Assistance, and Community P2 Grants.



A Community P2 Grant was awarded to provide engineering and technical assistance to this food processing company.

Pollution Prevention:

Department of Defense/State of Michigan Pollution Prevention Alliance



Steve Kulesia (right) presents Dr. Richard E. McClelland, TARDEC Director (center), and Rick Agnetti (left) with a P2 recognition award.

The Department of Defense-State of Michigan Pollution Prevention Alliance (DOD P2 Alliance) is in its third year and continues to facilitate pollution prevention (P2) information and technology exchange among its representatives from the Department of Defense, National Guard, Army, Air Force Reserve bases, armories, special divisions, U.S. Environmental Protection Agency Region 5 representatives, and Environmental Science and Services Division.

The DOD P2 Alliance “Strategic Plan”, updated annually, provides the framework of the partnership. This year’s highlights include the addition of two new partners: 927th Refueling Wing Air Force Reserves and Raytheon, Incorporated. Another highlight was the Second Annual Federal Facilities Environmental Workshop, held at the Selfridge Air National Guard Base in Mt. Clemens. Attendance at the workshop doubled over last year. Evaluations from attendees on the quality of the workshop were overwhelmingly positive.

In addition, the U.S. Army TARDEC received ISO 14001 certification (third party certification) and successfully completed Federal Facility Environmental Management System requirements pursuant to Federal Executive Order 13148. Two P2 Recognition Awards were issued to DOD staff, and two Opportunity (waste) Assessments were conducted at Michigan Army National Guard maintenance facilities, resulting in several P2 recommendations.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Governments, and US DOD Michigan Alliance.

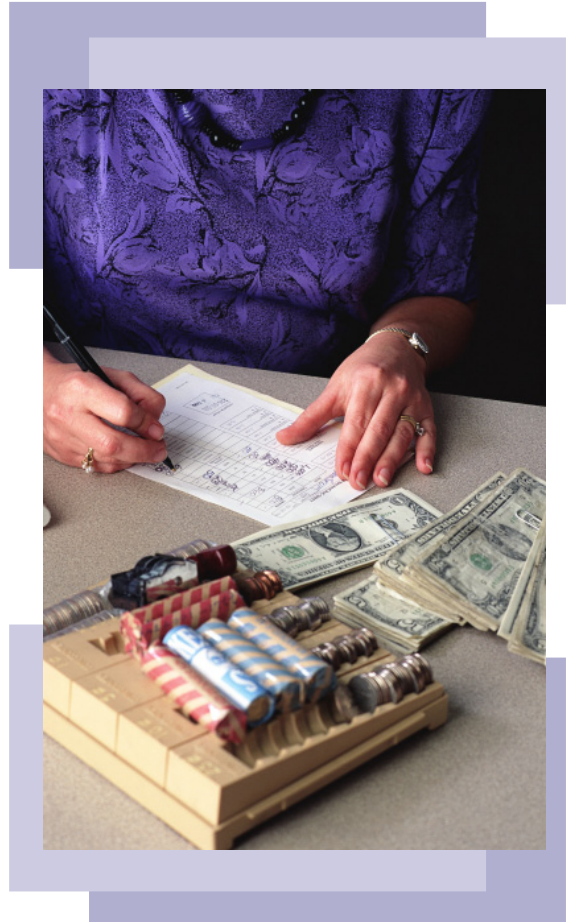
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Environmentally Preferred Purchasing

Environmentally Preferred Purchasing (EPP) promotes the purchase of products with reduced effect on human health and the environment, taking into account raw materials, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and disposal of the product.

The Environmental Science and Services Division (ESSD) continues to work with the business community as well as other state departments to encourage environmentally preferred products purchasing. In addition to the bulletins and fact sheets made available through this initiative, the Green Industry Guide to Environmental Purchasing was published in support of Michigan's proactive turfgrass industry. The ESSD will look to pilot a study on purchasing practices within Constitution Hall in an effort to establish an EPP policy for the Department.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Businesses, and Environmental Purchasing.



Purchasing environmentally preferred products makes good environmental and business sense.

Pollution Prevention:

Food Processing Pollution Prevention Initiative



A food processing line uses P2 practices.

The Food Processing Pollution Prevention (P2) Initiative focuses on promoting P2 opportunities throughout the food processing industry. Water consumption, energy use, and high concentrations of suspended and dissolved solids, such as sugars and salts in process wastewater, present unique environmental challenges to the industry. Through a Community Pollution Prevention Grant awarded to the District #10 Health Department in Oceana County, the Environmental Science and Services Division (ESSD) is providing engineering and technical assistance to food processors in Oceana and Newaygo Counties to evaluate possible alternative technologies to implement P2 and energy and water conservation measures.

In partnership with the Department of Agriculture and the Michigan Food Processors Association, ESSD will continue to work with food processors to develop and support the diffusion of P2 technologies and practices into the industry.

The highlights of this program include:

- Retired Engineer Technical Assistance Program (RETAP) assessments were conducted at two food processing companies. RETAP interns were placed at both facilities during the Summer of 2003.
- Food waste generated in process and sorting is reused as animal feed.
- One facility is exploring the feasibility of anaerobically digesting solids generated in wastewater treatment to produce methane for utilization in a combined heat and power system for the facility.
- On-line housekeeping and maintenance are actively implemented to separate and reduce organic loading in rinsing and clean-up operations.
- The other facility is exploring reduction of water use for application in process and alternate uses for spent sugar solution.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Businesses, Food Processing P2.

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Health Care Pollution Prevention

The Department of Environmental Quality received a U.S. Environmental Protection Agency (US EPA) Pollution Prevention Incentives for the States grant to advance pollution prevention (P2) throughout Michigan health care facilities. The initiative's goals are to define the current state of P2 and waste generation in the health care industry by facilitating completion of an analysis by the Michigan Hospital Association. This will be done in conjunction with grant activities to support health care adoption of the Hospitals for Healthy Environment (H2E) goals. These efforts will be accomplished through workshops, on-site technical assistance through the Retired Engineer Technical Assistance Program (RETAP), improved access to relevant P2 resources through updated health care P2 web sites, and published fact sheets and case studies of Michigan health care facilities.

Five health care facilities have undergone RETAP assessments, and ten additional hospitals have requested assessments to be scheduled. A health care training session was held for RETAP assessors in February 2003 that provided an introduction to waste concerns in health care and the tools and resources to assist hospitals with P2 resources available on the H2E and other web sites. The session also included a tour/review of award-winning St. Joseph Mercy Hospital in Ann Arbor. An additional training session in September 2003 provided comprehensive discussion of health care issues. Regional and Michigan health care experts participated in this session.

Statewide workshops for hospitals and other health care facilities are planned for May-June 2004 and will focus on encouraging implementation of P2. Several Michigan hospital success stories will be presented to encourage other health care facilities to recognize the value and cost savings of implementing P2.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Businesses, Healthcare P2.



Mercury-free sphygmomanometers are used in health care facilities to support mercury reduction goals.

Pollution Prevention:

Coordination between the regional P2 efforts with the Upper Peninsula Healthcare Network and the Michigan H2E Committee has strengthened that relationship and improved the access to on-site assistance and sharing of resources. The goals for the national H2E Initiative can be viewed on the web at www.h2e-online.org. This web site has extensive resources on it, including waste reduction tools, case studies, fact sheets, teleconferences, mercury elimination plans, policy statements, and environmentally preferable purchasing information.

Many Michigan Hospitals won national awards. They include:

- Borgess Medical Center, Kalamazoo, Partners for Change Award, 2003; Making Medicine Mercury Free Award, 2003
- Bronson Methodist Hospital, Kalamazoo, Partners for Change Award, 2002; Environmental Leadership Award, 2003; Making Medicine Mercury Free Award, 2003
- Detroit Medical Center, Detroit, Partners for Change Award, 2002
- Detroit Medical Center Health System, Detroit, Partners for Change Award, 2003; Making Medicine Mercury Free Award, 2003
- Foote Memorial Hospital, Jackson, Partners for Change Award, 2003
- Grand Traverse Band of Ottawa and Chippewa Indians Family Health Clinic, Peshawbestown, Partnership Recognition Award, 2003
- Michigan H2E Committee of the Michigan Health and Hospital Association, Lansing, Michigan, Champions for Change Award, 2002; Champions for Change Award, 2003
- St. Joseph Mercy Health System, Ann Arbor, Partners for Change Award, 2002; Making Medicine Mercury Free Award, 2002
- Sparrow Health System, Lansing, Partner Recognition Award, 2003
- University of Michigan Hospitals & Health Centers, Ann Arbor, Michigan (www.h2e-online.org/pubs/case_std/umich.pdf), Environmental Leadership Award, 2002; Making Medicine Mercury Free Award, 2002

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Businesses, and Health Care P2.

Local Health Department Partnership

The Local Health Department Partnership enhances and increases the practice of pollution prevention (P2) in the health care community through a partnership between the Department of Environmental Quality (DEQ) and the Michigan Association for Local Public Health (MALPH).

The P2 staff represent DEQ at the monthly Environmental Health Forum of MALPH. This Forum consists of environmental health directors from over forty local health jurisdictions in the state of Michigan. DEQ is an active partner in assisting the Environmental Health Forum in planning and policy formulation. A P2 staff member is also an elected executive board member of the Michigan Environmental Health Association (MEHA), providing a DEQ presence for promotion of P2 initiatives to the 700 plus members of MEHA.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Governments, and Local Health Depts.

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Mercury Reduction Initiative

The Mercury Pollution Prevention Initiative promotes the elimination of nonessential uses of mercury primarily through encouraging use of mercury-free substitutes. This process of product substitution alleviates public health and environmental hazards that stem from spills and/or improper disposal of mercury. The goal of the program is to reduce anthropogenic (human derived) releases of mercury to Michigan's environment.

This year one key priority area involves mercury in automobiles. Presently there are nearly eight million registered vehicles on Michigan's roadways. It is estimated that approximately half (.54 switches per vehicle) contain mercury switches under the hood and/or deck lid (trunk) of these vehicles. These mercury switches control the compartmental "convenience" lighting of the automobiles. If these mercury switches are not removed before scrapped vehicles become feedstock for recycled steel, mercury will be released into the environment. Scrap steel (electric arc furnace) mercury releases rate in the top ten sources of mercury air emissions in Michigan.

Throughout fiscal year 2003, the Department of Environmental Quality (DEQ) has studied this problem and developed a voluntary removal program that should address efficient recovery of these mercury containing switches. Presently, the DEQ is in the process of seeking acceptance from key stakeholders including automobile manufacturers, environmental groups, and auto recyclers.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Businesses, and Mercury P2.



Retrieving of mercury switches from the "convenience" lighting assembly.

Pollution Prevention:

Metal Finishing Pollution Prevention Initiative

The Metal Finishing Pollution Prevention Initiative (MFP2I) focuses on integrating pollution prevention (P2) into manufacturing operations. The MFP2I sponsored Environmental Management Systems training to 14 metal finishing facilities. The training was a joint partnership between the Michigan Metal Finishing Association, U.S. Environmental Protection Agency (US EPA) under a Pollution Prevention Incentives for States Grant, and the Department of Environmental Quality (DEQ). The objective of the training was to increase P2 awareness, reduce environmental impacts, and help facilities within this industrial sector attain Clean Corporate Citizen (C3) designation.

The MFP2I also recognized eight Michigan companies for their continued environmental performance by awarding them the Michigan Strategic Goals Program (SGP) Award. The SGP is a performance-based, voluntary program that includes commitments by the industry to meet multimedia environmental targets that substantially reduce metal finishing waste from their operations. It rewards companies that reduce metal and organic chemical emissions, water use, sludge generation, and energy beyond environmental compliance levels.

The gold, silver, and bronze-level awards are presented when a company achieves the national goal performance levels and maintains good compliance standing as verified by a Technical Review Panel represented by the DEQ, US EPA, and a publicly owned treatment works. A bronze-level award shows 33 percent progress toward the national goals, the silver level denotes a 66 percent achievement, and gold level is for 92 percent achievement and designation as a C3.



Strategic Goals Program Awards are presented.

Making Sustainability a Reality

Companies that were recognized for their achievements are:

- KC Jones Plating, Hazel Park (bronze)
- Wolverine Plating Corporation, Roseville (bronze)
- Bronson Plating, Bronson (silver)
- ElectroChemical Finishing Company, Wyoming (silver)
- ElectroChemical Finishing Company #2, Wyoming (silver)
- Howard Plating, Madison Heights (silver)
- Lansing Plating, Lansing (silver)
- Tawas Plating & Powder Coatings, Tawas City (silver)

The MFP2I also coordinated the implementation of P2 projects at two metal finishing facilities under the RETAP P2 Internship Program. The interns were successful in reducing the water usage, chemical usage, and the substitution of non-hazardous chemicals in a stripping and finishing operation (see RETAP P2 Internship Program section, page 38).

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Business Partnerships, and Metal Finishing.



A student intern assists with implementing wastewater reduction technology resulting in savings at a metal finishing facility.

Pollution Prevention:

“Movement from P2 to Sustainability is a journey in three parts:

- *The organization must first clearly understand its processes and the systems within which they operate.*
- *Second, there must be a management system that enables conformance to a prevention-focused process improvement program.*
- *Finally, the organization must score its true performance and P2 results as a way to quantitatively determine the level of continuous improvement.*

All three parts are needed to sustain the journey.”

— Robert Pojasek, Ph.D. and
President
Pojasek and Associates

Michigan Automotive Project

The Michigan Auto Pollution Prevention (P2) Partnership promotes pollution reductions in vehicle manufacturing through a voluntary P2 and resource conservation partnership between DaimlerChrysler, Ford, General Motors, and the Department of Environmental Quality. Participants continue to be major supporters of the Waste Reduction and Energy Efficiency Workshop.

The Auto P2 Partnership continues to be a collaborative effort aimed at strengthening P2 efforts throughout the automotive industry. The partnership currently is focused on forging new alliances with the extensive network of automobile parts suppliers. These partnerships work toward solving environmental problems with the input of both the automakers (i.e., Ford Motor Company, General Motors Corporation, DaimlerChrysler Corporation) and the suppliers. The past successes of the Auto P2 Partnership continue to advance P2 opportunities for many companies, with over 100 case studies and a comprehensive web site of auto-related information available for their use. The Auto P2 Partnership will continue to drive P2 with the automobile parts suppliers through governmental outreach/mentoring programs, such as the Michigan Business Pollution Prevention Partnership.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Business Partnerships, and Automotive.

Making Sustainability a Reality

Michigan Business Pollution Prevention Partnership

The Michigan Business Pollution Prevention Partnership (MBP3) is one of the longest standing pollution prevention (P2) partnerships and has continued to expand and mature over the past year. MBP3 encourages businesses, organizations, and institutions to apply creative, cost-effective techniques to reduce waste and prevent the release of hazardous substances.

The MBP3 produced another strong year, recruiting 25 new partners, for a total of 203 voluntary participants. Participants benefit by advanced technology and information exchange through informal inquiries. These inquiries generate a multitude of responses that are subsequently shared with the entire partnership.

By utilizing workshops and electronic media, members continue to share ideas on P2-oriented environmental management, sustainability, recycling, and resource management. These workshops strived to bring the expertise of MBP3 members into a forum where they can share their real world experiences.

Partners continue to seek out new source reduction and waste minimization opportunities, which result in decreased liabilities and increased cost savings. At the close of 2003, there were MBP3 partners located in 86 different cities and 38 counties. The following MPB3 partners provided examples of accomplishments for 2003:

- Betz Industries – Selected cleaning products based on their “environmentally friendly” content; office paper reduction program gives priority to recycled products; and worked with suppliers to buy raw materials in bulk/reusable containers to eliminate waste.
- Denso Manufacturing – Eliminated radiator paint process (largest source of VOC emissions), reduced water usage by 1.45 million gallons, reduced landfill waste by 235,000 lbs., recycled over 11.7 million lbs. of material, reduced lead solder usage by 55 percent (95,000 lbs.), and increased cardboard recycling by 42 percent (800,000 lbs.).
- Pfizer Global Research and Development – Enacted best practices for laboratory fume hood emissions reductions, initiated new waste tracking system, collected 672 mercury containing thermometers (35.28 lbs.), and initiated environmentally preferred purchasing program.
- Siemens VDO Automotive – Reduced liquid hazardous waste (fuels, oils) from 20 drums in 2001 to 10 drums in 2002, implemented used laboratory equipment reuse program with local trade schools, and created a global environmental policy and guidelines.
- Steelcase Inc. – Converted liquid to powder paint resulting in elimination of 275,000 lbs. of VOC air emissions, utilized distillation units for solvent reuse, recycled 800 printer cartridges, and collected 11,000 Christmas cards for St. Jude’s Children’s Hospital.

Pollution Prevention:

- March Coatings – Purchased High Volume, Low Pressure spray guns which reduced material usage by 12 percent (Plant 2), reduced hazardous waste by 7 percent (Plant 2), reduced electrical usage by 25 percent (Plant 1), and reduced water and gas usage by 15 percent (Plant 1).
- Matrix System Automotive Finishes, Inc. – Reclaimed through distillation 6,000 gallon of solvents, customer returns of finishes were returned to inventory rather than shipped as liquid industrial waste, and reduced hazardous waste shipments by 42 percent in 2002 and over 80 percent since 1999.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Business Partnerships, and Michigan Business Partnership.

Michigan Business Pollution Prevention Partnership members include:

- | | | |
|---|--|---|
| • Access Business Group | • Battery Solutions Inc. | • C-Mar Products Inc. |
| • AEC-Manchester Stamping | • Bear Truss, Inc. | • Coldwater Board of Public Utilities |
| • Alpha Plastics, Inc. | • Behr Industries Corporation | • Collins & Aikman, Westland Operations |
| • American Axle & Manufacturing - Detroit Gear and Axle | • Belle Maer Harbor | • Colonial Press, Inc. |
| • American Electric Power - Nuclear Generation | • Benteler Automotive | • Complete Builders, Inc. |
| • ANR Pipeline Company | • Betz Industries | • Consumers Energy - Adrian Service Center |
| • Applied Environmental | • BLDI Environmental & Safety Management | • Consumers Energy - BC Cobb Plant |
| • Arnold Center, Inc. | • Borg Warner Cooling Systems | • Consumers Energy - JH Campbell Complex |
| • ARVCO Container Corporation | • BP Amoco Company | • Consumers Energy - JR Whiting Plant |
| • Associated Petroleum Industries of Michigan | • Brownrigg Companies, Ltd. | • Consumers Energy - Parnall Rd. Office Complex |
| • Atlas Technologies, Inc. | • Cadillac Renewable Energy | • Consumers Energy, J.C. Weadock Plant |
| • ATOFINA Chemicals, Inc. | • Campbell & Company | • Corsair Engineering, Inc. |
| • Atomic Cleaning Systems LLC | • Capital City Associates | • Crystal Flash Energy |
| • AutoAlliance International, Inc. | • Capitol Group Governmental Consultants | • Cyltec LLC |
| • Automatic Spring Products Corporation | • Cascade Engineering | • Delphi Energy and Chassis |
| • Baker Furniture | • Chemical Management Associates Inc. | • Delta College |
| • BASF Corporation, Wyandotte Site | • Chivas Industries | • Demmer Corporation - Delta Plant |
| | • City of Grand Haven | • Demmer Corporation - Oakland |
| | • City of Wyoming - Clean Water Plant | • Demmer Corporation - Porter |

Making Sustainability a Reality

- DENSO Manufacturing Michigan, Inc.
- Depor Industries, Inc.
- Detroit Edison - Fermi 2 Plant
- Detroit Edison Company
- DeWitt Barrels
- Douglas Cleaners
- Dow Corning Midland Plant
- DuPont Automotive, Mt. Clemens Site
- E & E Manufacturing Company, Inc.
- Eagle Ottawa - Rochester Hills, Ltd.
- Eagle Ottawa Leather Company (Grand Haven)
- East Jordan Iron Works
- Eaton Aeroquip Inc. - Jackson
- Eaton Corporation - Rochester Hills
- Eaton Corporation - Saginaw
- Eaton Corporation PSCO Ann Arbor
- Electrical Design and Control
- Elm Plating Company
- Envirologic Technologies, Inc.
- Environmental Health Resources Inc.
- ESCO Company Limited Partnership
- Evans Tempcon
- Flexible Products Co. Inc.
- Ford Motor Company - ATNPC
- Ford Motor Company - Livonia Transmission
- Foundry Association of Michigan
- Four Winns, Inc.
- General Motors - Orion Assembly Center
- General Motors - PCC Validation
- General Motors - Pontiac Assembly Center
- General Motors Lansing Regional Stamping Plant
- General Motors Powertrain - Bay City Plant
- General Motors Powertrain - Flint North
- General Motors Powertrain - Livonia Engine
- General Motors Powertrain - Romulus Engine Plant
- General Motors Powertrain - Romulus Transmission
- General Motors Powertrain - Saginaw Malleable Plant
- General Motors Powertrain - Saginaw Metal Castings
- General Motors Powertrain - Warren Transmission
- General Motors Technical Center
- General Oil Company, Inc.
- Genesee Power Station
- Genesys Health System
- Georgia-Pacific Corporation - Milan
- Gil-Mar Manufacturing Company
- Global Business Solutions, LLC
- Grayling Generating Station
- Great Lakes Contracting
- Great Lakes Gas Transmission Company
- Harry Major Machine & Tool
- Haworth, Inc.
- Hazekamp Meats
- Hemlock Semiconductor
- Herman Miller, Inc.
- Huron, Inc.
- I & W Industries, LLC
- Inalfa/SSI Roof Systems
- Inland Waters Pollution Control, Inc.
- Irwin Seating Company
- ITT Industries
- Jan's Professional Drycleaners
- Kaiser Optical Systems, Inc.
- Keykert USA
- Knoll Inc.
- Lacks Enterprises - 52 Paint East
- Lacks Enterprises - 52 Paint West
- Lacks Enterprises - 52nd Street Mold
- Lacks Enterprises - Airplane North & South
- Lacks Enterprises - Airwest Assembly
- Lacks Enterprises - Airwest Mold
- Lacks Enterprises - Barden Assembly
- Lacks Enterprises - Brockton Mold
- Lacks Enterprises - Monroe Plastic Plate
- Lacks Enterprises - Raleigh Mold
- Lacks Enterprises - Raleigh Paint
- Lafarge North America - Alpena Plant
- LDM Technologies - Clarkston
- LDM Technologies - St. Clair
- MAC Valves

Pollution Prevention:

- Magna Donnelly
- Magni Industries, Inc.
- Marathon Ashland Petroleum, LLC
- March Coatings - Plant 2
- March Coatings, Inc.
- Marine Pollution Control Corporation
- Mark IV Automotive
- Matrix System Automotive Finishes, Inc.
- Mayco Plastics, Inc.
- McCormick Enterprises, Inc.
- Meridian Automotive Systems - Paint Facility
- Meridian Automotive Systems - Plant 1
- Meridian Automotive Systems - Plant 5
- Meridian Automotive Systems - Plant 7
- Meridian Automotive Systems - Canton
- Meridian Automotive Systems - Detroit
- Meridian Automotive Systems - Ionia Operations
- Michigan Boating Industries Association
- Michigan Chemical Council
- Michigan Consolidated Gas Company
- Michigan Institute of Laundering and Drycleaning
- Michigan Seat Company
- Michigan Seat Company Suspension Seat Division
- Mid-West Instrument
- Midwest Supply and Maintenance Co.
- Modern Plastics Corporation
- MWP Inc. - Pleuco Technologies Division
- Ondeo Nalco, Jackson Plant
- Palmer Engineering, Inc.
- Pfizer Global Manufacturing
- Pfizer Global Research and Development
- Pharmacia
- PHI Environmental
- Pioneer Foundry Company, Inc.
- Polar Environmental Service Corporation
- Pratt & Whitney AutoAir, Inc.
- Quality Metalcraft, Inc.
- ReCellular, Inc.
- Resource Recovery Corporation of West Michigan
- RMT, Inc.
- Ronningen Research & Development Company
- Sackner Products - Unit of Jason Inc.
- Saugatuck Yacht Service
- Schefenacker Vision Systems USA, Inc.
- Siemens VDO Automotive
- Sierra Geological & Environmental Consultants, Inc.
- Skilled Manufacturing, Inc.
- Solutia, Inc.
- Sparrow Health System
- SQS, Inc.
- Steelcase, Inc.
- Sunshine Prairie Farm
- Suspa Incorporated
- T.E.S. Filer City Station
- TAC Manufacturing, Inc.
- Taplin Environmental Contracting Corporation
- Taylor Building Products
- Teknit
- TekSolutions, LLC
- Tenneco Automotive
- Tesco Engineering
- The Traverse Group
- The Wireless Source
- Tower Marine
- TriMedia Consultants, Inc.
- Tweddle Litho Company
- United States Postal Service, Lansing Branch
- Universal Coating, Inc.
- Vico Products Company
- Visteon Corporation - Sheldon Road Plant
- Visteon Corporation - Chesterfield Plant
- Visteon Corporation - Utica Plant
- W.E.S. Corporation
- Wacker Chemical
- Weyerhaeuser Company
- Wisconsin Electric Power - Presque Isle Plant
- Yamaha Musical Products
- Yazaki North America, Inc.

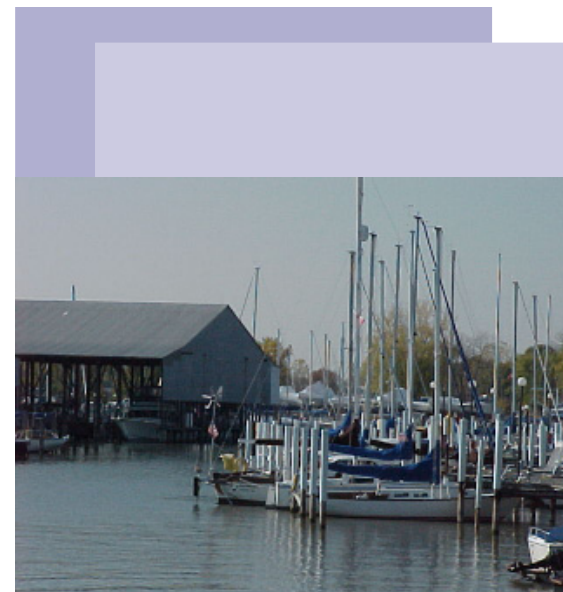
Making Sustainability a Reality

Michigan Clean Marina Program

The Michigan Clean Marina Program was launched in the spring of 2003 with the signing of a Memorandum of Understanding between the Michigan Boating Industries Association, Michigan Sea Grant College, and the Department of Environmental Quality. In support of the program, the Environmental Science and Services Division (ESSD) has received a grant from Coastal Zone Management to complete a guidebook on marinas best management practices and buffer zone development. This program was initiated to preserve and protect the Great Lakes and its connecting waterways through voluntary efforts by businesses. As part of this voluntary effort the ESSD will provide marinas and marine-related businesses a forum for sharing pollution prevention (P2) technologies and provide encouragement to these businesses to take advantage of available environmental, technical, and financial assistance programs. Michigan has more than 1,406 public access sites, 750 marinas, 680 marine dealers, 41 boat manufacturers, 85 Great Lakes recreational harbors, and 1.2 million registered boaters, providing the Clean Marinas Program plentiful opportunities for success.

The following organizations have provided technical review and support during the development and implementation of the Michigan Clean Marina Program:

- All Seasons Marine
- Anchor-In Marina
- Belle Maer Harbor
- Bluffton Bay Marina
- City of Escanaba
- Hoys Saginaw Bay Marina
- Irish Boat Shop
- Luna Pier Harbour Yacht Club
- MacRay Harbor
- MI 4-H Youth Conservation Council
- Pier 1000 Marina
- Port Sanilac Marina
- Torresen Marine
- Tower Marine
- Viking Boat Harbor
- Whitehall Landing



Michigan has more than 1,406 public access sites, 750 marinas, 85 Great Lakes recreational harbors, and 1.2 million registered boaters.

Pollution Prevention:

Michigan Electronics Recycling Project

The Department of Environmental Quality (DEQ) recognized that electronic products are being generated as waste in growing volumes by Michigan businesses and residents. Electronic products such as computers, televisions, and cell phones contain lead, mercury, cadmium and other hazardous materials. Additionally, businesses must comply with regulations that treat many electronic products as hazardous waste, but residents are not governed by these regulations and can legally send electronics to landfills and incinerators.

To address this issue, the DEQ Director formed a stakeholder work group, including representatives from community electronic collection programs, recycling companies handling electronics, regulators, retailers, manufacturers, and other interested parties. This work group was charged to come up with a plan to recycle electronics that are being legally sent to landfills and incinerators for disposal. Recommendations will be presented to the DEQ Director by July, 2004, with the intent that these recommendations be submitted to the Governor for implementation.

Michigan Electronic Waste Stakeholders Work Group Members include representatives from the following:

- Business Ombudsman
- Central Michigan University
- Clinton County Dept. of Waste Management
- Comprenew
- Consumer Electronics Association
- Department of Information Technology
- Department of Environmental Quality
- Ecology Center
- Electronic Industries Alliance
- Environmental & Legal Affairs
- Great Lakes Electronic Recycling
- Kalamazoo County
- Kalamazoo County HHW Center
- Meijer
- Michigan Department of Corrections
- Michigan Retailers Association
- Michigan Waste Industries
- Oakland County
- Panasonic
- REAP2 (Oakland County)
- Recellular Inc.
- Resource Recovery & Recycling Authority of SW Oakland County
- Ryan Correctional Facility, Michigan Department of Corrections
- Sustainable Research Group
- U.S. Environmental Protection Agency, Region 5
- Washtenaw County Public Works Division, DEIS
- Waste Management



These electronic products are being targeted for recycling.

Making Sustainability a Reality

Michigan Great Printers Project

The Michigan Great Printers Project (MI-GPP) is another longstanding partnership that provides technical assistance, pollution prevention (P2) workshops, and case studies to printers who are committed to minimizing impacts on health and the environment.

A major accomplishment of MI-GPP for 2003 was the publishing of the Regulatory Guidebook for Michigan's Lithographic Printing Industry (Second Edition). The guidebook was a cooperative effort between the Department of Consumer and Industry Services and the Department of Environmental Quality and contains a comprehensive, easy-to-use, plain-English description of all environmental, health, and safety regulations with which the lithographic printing industry must comply. The guidebook also devotes a major chapter to P2. In addition to publishing the guidebook, Upper Peninsula members took part in the Regional P2 Grant Program's Central Lake Superior Watershed Project which was completed this fiscal year, and the NorthStar Print Group renewed its Clean Corporate Citizen application.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Business Partnerships, and Great Printers.

Printers who have met the requirements for the Michigan Great Printers Project are:

- A & E Printers
- A-1 Printing & Copy Center
- Access Business Group
- Action Printing
- Adair Printing
- Allegra Print & Imaging, Grand Haven
- Allegra Print & Imaging, Grand Rapids
- Allegra Print & Imaging, Holland (2 locations)
- Allegra Print & Imaging, Lansing
- Allegra Print & Imaging, Portage
- Allegra Print & Imaging, Royal Oak
- Allegra Print & Imaging, Wixom
- Alphagraphics
- American Ink
- Amerikal, Inc.
- Anderson Lithograph
- Aquila Printing
- Arrow Swift
- ASAP Printing
- Batson Printing
- Book Concern Printers
- BRD Printing Inc.
- Bryant Printing
- Business Cards Plus
- Business Imaging Group
- Champion Printing and Advertising
- Clarke American
- Classic Printers
- Classic Printing, Inc.
- Colonial Press, Inc.
- Copy Options, Inc.
- Copy Quick
- Craft Press Printing
- Dandee Printing Company
- Danielson Color Print
- Delta Printing Company, Inc.
- Dickinson Press
- E&G Printing Service, Inc.
- Earle Press Printing
- Econo Print, Inc.
- Edwards Brothers, Inc.
- EPI Printers
- Etheridge Company, The
- Executive Printing Services
- Falcon Printing
- Fidler Doubleday
- Flashes Publishers
- F.P. Horak Company, The

Pollution Prevention:

- Gardner Printing
- Gargoyle Graphics, LLC
- G-Graphics
- Gladstone Printing
- Goetzcraft Printers
- Gonzalez Integrated Marketing, Inc.
- Grandville Printing
- Graphic Enterprises, Inc.
- Graphics 3, Inc.
- Hatteras Printing
- Holland Sentinel, The
- Homewood Press, Inc.
- Howard Printing
- Huron Valley Printing & Imaging
- Ideal Printing Company
- Impressions Printing Inc.
- Inco Graphics
- Ingham County Printing Office
- International Minute Press, Farmington Hills
- International Minute Press, Ann Arbor
- International Minute Press, Portage
- IPC Communications Services
- Janutol Printing Co.
- JB Printing
- Jet Speed Printing Company
- Jiffy Print, Inc., Kalamazoo
- Jiffy Prints, Flint
- Job Shop, The
- John Henry Company, The
- JP Print & Copy
- Keystone Printing, Inc.
- Kimcraft Printers
- Kinko's, Okemos
- Kinko's Copies, Inc., Lansing
- Kinko's, Inc., E. Lansing
- Lake Superior Press
- Lansing Printing Company
- Lawson Printers, Inc.
- Logan Brothers
- LTI Printing
- Macomb Printing
- Malloy Inc.
- Mason Graphics, Inc.
- McGrath-DeFoe Printing
- McKay Press
- McNaughton & Gunn, Inc.
- Michigan Education Data Network Association
- MICR Graphics/Billy the Printer
- Millbrook Printing
- Mitchell Graphics
- Moore North America
- Myers Print King
- North Star Print Group
- Paper Image Printing Center
- Parkman Printing, Inc.
- Petoskey News-Review
- Portage Printing
- Presto Print
- Print Haus, The
- Print Shop, The
- Printery, The
- Printwell
- Progressive Graphics
- Quick Printing Company
- Relizon
- Reyes Advertising Specialties
- Riegle Press Inc., The
- Riverrun Press
- Rogers Printing, Inc.
- SBF/Corona Graphics, Inc.
- Seeley's Printing Service
- Sheridan Books, Inc., Ann Arbor
- Sheridan Books, Inc., Chelsea
- Sir Speedy
- Sir Speedy Printing
- Spartan Printing
- Standard Printing & Office Supply
- State of Michigan, Print & Graphic Services
- Sterling Press
- Superior Business Solutions
- Superior Color Graphics
- SVH Group
- Target Information Management, Inc.
- TBF Graphics
- Thomson-Shore Inc.
- Townley Studio
- Tweddle Litho Company
- University Lithoprinters
- Utley Brothers, Inc.
- Valassis Communications, Inc.
- Vertis Inc. RNS-Greenville
- Webco Press - Mass Media
- West Colony Printing
- Wood Press Company

Making Sustainability a Reality

Michigan Household Hazardous Waste Grant Program

The Michigan Household Hazardous Waste (HHW) Collection Initiative is a partnership with local communities to provide a means of collecting and disposing of hazardous materials. Over \$1 million was awarded to local communities to increase the number of collection sites offered throughout the state.

The HHW collections have continued to increase the ability of Michigan residents to properly, safely, and conveniently dispose of their hazardous wastes. These collections are important to ensure the continued protection of Michigan's water and land from adverse impacts associated with illegal dumping and improper storage of hazardous materials. The grant program has the responsibility for establishing and/or enhancing the HHW collection programs in 20 Michigan counties. Some grantees choose to have multiple collection events, while others have focused on a one-time annual event. The total participants and materials collected to date are:

- 8,534 participants at 46 collections
- 554,000 pounds of household hazardous waste collected and properly disposed/recycled/reused.

The following is a list of grantees, number of participants involved in the Initiative, and the accumulative total pounds collected from the inception of the program:

- | | | |
|---|---|--|
| <ul style="list-style-type: none">• City of Cadillac
Participants: 786
Total collections (pounds): 46,489• Multi-County Solid Waste Task Force
Participants: 434
Total collections (pounds): 36,873• Leelanau County Board of Commissioners
Participants: 527
Total collections (pounds): 43,161• Grand Traverse County
Participants: 1,086
Total collections (pounds): 92,118 | <ul style="list-style-type: none">• Northeast Michigan Recycling Alliance Authority
Participants: 1,271
Total collections (pounds): 66,363• Washtenaw County Grant
Participants: 1,700
Total collections (pounds): 130,000• Macomb County HHW Program
Participants: 1,946
Total collections (pounds): 92,313• Chippewa County
Participants: 528
Total collections (pounds): 50,372 | <ul style="list-style-type: none">• Livingston County
Participants: 415
Total collections (pounds): 43,269• Shiawassee County Community Development
Participants: 729
Total collections (pounds): 28,149• Muskegon County
Participants: 163
Total collections (pounds): 5,100 |
|---|---|--|



Collections are important to ensure the continued protection of Michigan's water and land.

Pollution Prevention:

Michigan Pulp Paper and Products Pollution Prevention Program

The Michigan Pulp Paper and Products Pollution Prevention Program (P5 Program) promotes environmental improvement in concert with economic growth and security in the pulp and paper industry through a partnership between the Department of Environmental Quality and the Michigan Pulp & Paper Environmental Council.

Over the past year, the P5 Program has built on the successes realized in working with Michigan's pulp and paper mills by partnering with the Michigan Forest Products Council and wood products manufacturers to promote pollution prevention (P2) as an economical and technically practical method for enhancing environmental quality and business sustainability. As such, in 2003 the name of the P2 partnership was expanded to recognize these potential new partners to the P5 Program. For 2003, members have committed to the "Development of a Mercury Minimization Plan" as an industry-wide goal. In addition, members remain committed to reducing sewer losses, air emissions, water usage, and wastewater discharges; minimizing land filling of solid wastes by finding practical alternative uses; and promoting recycling, environmental management systems, and sustainable forestry practices.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Business Partnerships, and Pulp & Paper.

Members of the P5 Program include:

- Domtar Industries
- International Paper Company
- Louisiana-Pacific Corporation
- Mead Westvaco Papers Group
- Menasha Packaging Company
- Menominee Paper Company
- Packaging Corporation of America
- RMT, Inc. (affiliate member)
- Rock-Tenn Corporation
- SAPPI Fine Paper, North America
- Smurfit-Stone Container Corporation



Domtar Industries receives their ISO 14001 certification.

Making Sustainability a Reality

Michigan Turfgrass Environmental Stewardship Program

The Michigan Turfgrass Environmental Stewardship Program (MTESP) advances the environmental stewardship of the golf industry and recognizes environmental achievements through a partnership with the turfgrass industry, state agencies, and Michigan State University.

The MTESP has been acknowledged as a national model for promoting compliance and environmental stewardship with golf courses. Golf courses recognize their potential for point source and non-point source pollution. These concerns have provided an opportunity for Michigan to be progressive with innovative programs such as the MTESP. The program has enjoyed strong support with 228 participating Michigan facilities, which equates to approximately 25 percent of all golf courses in Michigan. Participants receive compliance assistance and are encouraged to undertake increased pollution prevention (P2). A strong focus for these facilities has been in the area of environmentally preferable purchasing (EPP) with advances in a variety of products. Other innovations include:

- The installation of electronic irrigation systems which conserve up to 50 percent in water usage.
- The use of mapping and Global Positioning Systems for herbicide/pesticide applications. The use of Geographic Information Systems also plays an important role in fertilizer applications.
- The increased use of bio-based hydraulic fluids for maintenance equipment has led to a general decrease in petroleum related wastes.
- Through the application of EPP, one resort eliminated 34 separate cleaners from their inventory by changing over to a citric-based, multi-purpose cleaner.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Business Partnerships, and Turfgrass Stewardship.

Pollution Prevention:

Michigan Turfgrass members include:

- A-Ga-Ming Golf Course
- Alpena Golf Club
- Ann Arbor Country Club
- Apple Mountain
- Arbor Hills Country Club
- Arcadia Bluffs Golf Course
- Arcadia Hills Golf Course
- Battle Creek Country Club
- Bay City Country Club
- Bay County Golf Club
- Beacon Hills Golf Course
- Bedford Valley Golf Course
- Binder Park Golf Club
- Birchwood Farm Golf & Country Club
- Birmingham Country Club
- Black Lake Golf Club
- Bloomfield Hills Country Club
- Blythfield Country Club
- Bogie Lake Golf Club
- Boyne Highlands Resort
- Branson Bay
- Briar Ridge Golf Course
- Bucks Run Golf Club
- Byron Hills Golf Course
- Canadian Lakes Country Club
- Cascade Hills Country Club
- Cedar Valley Golf Club
- Charlevoix Country Club
- Charlevoix Golf Course
- Cherry Creek Golf Club
- Chestnut Valley Golf Club
- Chisholm Hills Golf Club
- Copper Hills Golf & Country Club
- Copper Ridge Golf Course
- Country Club of Detroit
- Country Club of Jackson
- Crystal Mountain Resort
- Crystal Springs Country Club
- Currie Municipal Golf Course
- Dear Run Golf Course
- Dearborn Hills Golf Course
- Dutch Hollow Golf Club
- Eastern Hills Golf Course
- Egypt Valley Country Club
- Elk Ridge Golf Course
- Ella Sharp Park Golf Course
- Elmbrook Golf Course
- Evergreen Hills Golf Course
- Fieldstone Golf Club
- Flint Elks Country Club
- Flint Golf Course
- Forest Akers Golf Course - MSU
- Forest Lake Country Club
- Fox Creek Golf Course
- Fox Hills Golf & Banquet Center
- Franklin Hills Country Club
- Garland Resort
- Gaylord Country Club
- Germania Town & Country Club
- Glen Oaks - Oakland County Parks
- Golf Club of Michigan
- Goodrich Country Club
- Gowanite Golf Club
- Grand Haven Golf Club
- Grand Hotel Golf Course
- Grand Rapids Golf Club
- Grand Traverse Resort
- Great Oaks Country Club
- Greystone Golf Club
- Groesbeck Golf Course
- Grosse Ile Golf & Country Club
- Gull Lake Country Club
- Gull Lake View Golf Course
- Gull Lake View Stonehedge Golf Course
- Hawk Hollow Golf Course
- Heather Hills Golf Club
- Hemlock Golf Club
- Hessel Ridge Golf
- Hidden River Golf & Country Club
- Hilltop Golf Club
- Hudson Mills Metropark Golf Course
- Huron Meadows Metropark Golf Course
- Idyl Wyld Golf Course
- Indian Lake Hills Golf Course
- Indian Springs Metropark Golf Course

Making Sustainability a Reality

- Inkster Valley Golf Course
- IronWood Links
- Kalamazoo Country Club
- Katke Cousins Golf Course
- Kensington Metropark Golf Course
- Kincheloe Memorial Golf Course
- Knollwood Country Club
- Lake Erie Metropark Golf Course
- Lakeland Hills Golf Club
- Lakelands Golf & Country Club
- Leelanau Club
- Leslie Park Golf Course
- Lincoln Hills Golf Club
- Links at Bowen Lake
- Links at Pinewood
- Little Traverse Bay Golf Club
- Lochenheath Golf Club
- Lochmoor Club
- Lost Lake Woods
- Lower Huron Metropark Golf Course
- Lyons Oaks Oakland County Parks
- Maple Hill Golf Club
- Maple Lane Golf Club
- Marion Oaks Golf Course
- Marysville Golf Course
- Marywood Golf Club
- McGuires Resort
- Meadowbrook Country Club
- Metro Beach Metropark Golf Course
- Midland Country Club
- Milham Park Golf Course
- Moss Ridge Golf Course
- Mt. Pleasant Country Club
- Mystic Creek Golf Club
- Newberry Country Club
- Northbrook Golf Course
- Northville Hills Golf Club
- Oak Crest Golf Course
- Oak Pointe Country Club
- Oakhurst Country Club
- Oakland Hills Country Club
- Oxford Hills Golf & Country Club
- Paint Creek Country Club
- Partridge Creek Golf Course
- Petoskey-Bay View Country Club
- Pheasant Run
- Pictured Rock Golf Course
- Pierce Lake Golf Course
- Pilgrim's Run Golf Club
- Pine Lake Country Club
- Pine View Golf Course
- Pipestone Creek
- Plym Park Golf Course
- Point O'Woods Golf & Country Club
- Port Huron Golf Club
- Radrick Farms Golf Club
- Railside Golf Club
- Raisin River Golf Club
- Ramshorn Country Club
- Red Arrow
- Red Hawk Golf Club
- Red Run Golf Club
- Richmond Forest Golf Course
- Riverview Highlands Golf Club
- Rolling Meadows Golf Course
- Royal Scot Golf Course
- Saginaw Country Club
- Salem Hills Golf Course
- San Marino Golf Course
- Shanty Creek Resort
- Shepard's Hollow Golf Course
- Somerset Park Golf Course
- Southgate Municipal Golf Course
- Southmoor Golf Course
- Spring Lake Country Club
- Springfield Oaks - Oakland County Parks
- St. Clair River Country Club
- St. Clair Shores Country Club
- St. Ives Golf Club
- St. Johns Golf & Conference Center
- Stonebridge Golf Course
- Stony Creek Golf Club
- Sunnybrook Country Club
- Sycamore Hills Golf Club
- Sylvan Glen Golf Course
- Tam O'Shanter Country Club
- Tanglewood Marsh Golf Course
- Tecumseh Country Club
- Terrace Bluff Country Club
- The Emerald at Maple Creek

Pollution Prevention:

- The Farm Golf Club
- The Fortress
- The Heathers Country Club
- The Highlands
- The Homestead
- The Kingsley Club
- The Legacy
- The Links at Whitmore Lake
- The Majestic at Lake Walden
- The Meadows Golf Club
- The Moors
- The Natural
- The Orchards Golf Club
- The Otsego Club
- The Pines at Lake Isabella
- The Pohlcatt
- The Rock at Woodmoor
- The Sawmill Golf Club
- The Timbers Golf Club
- The Wyngate
- Thousand Oaks Golf Club
- Thunder Bay Resort
- Timber Ridge Golf Club
- Timber Trace Golf Club
- Tournament Players Club of Michigan
- Traverse City Golf & Country Club
- Travis Pointe Country Club
- Treetops Sylvan Resort
- True North Golf Club
- Twin Beach Country Club
- Twin Lakes Golf Club
- Ubley Heights Golf Course
- University of Michigan Golf Course
- Veronica Valley Golf Course
- Wabbeek Country Club
- Walloon Lake Country Club
- Walnut Creek Country Club
- Walnut Hills Country Club
- Warren Valley
- Warwick Hills Golf and Country Club
- Washtenaw Country Club
- Watermark Country Club
- Water's Edge Country Club
- West Shore Golf and Country Club
- Whispering Pines Golf Course
- Whispering Willows Golf Course
- White Lake Oaks - Oakland County Parks
- Wild Bluff Golf Course
- Willow Metropark Golf Course
- Wolcott Mill Golf Course
- Wolverine Golf Club
- Woodlands of VanBuren
- Wuskowhan Players Club
- Wyandotte Shores Golf Course

Making Sustainability a Reality

Pollution Prevention Week

Michigan has participated in the celebration of national “Pollution Prevention (P2) Week” since its inception in 1996. During this week, the Department of Environmental Quality (DEQ) promotes P2 activities at home, work, and school. The theme for this year’s P2 week, September 15-21, 2003, was “Sustainability Thru Pollution Prevention.”

The DEQ is proud of its P2 heritage, programs, initiatives and partnerships. We look forward to raising P2 awareness in the community through education and modification of our every-day behavior and/or life style. P2 Week provides an excellent opportunity for the DEQ to educate, support, and promote P2 activities. At home, P2 tips are available on the Internet. In schools, the DEQ conducts environmental education presentations about P2 and various DEQ programs to elementary, junior high, and high school students, as well as P2 program workshops to businesses and the community. At work, the DEQ sponsors a “brown bag” luncheon with P2 presentations for all staff. The DEQ issues P2 awards in recognition of the DEQ staff that display exemplary P2 accomplishments throughout the year. Additionally, DEQ encourages partner companies and government agencies to participate in P2 Week activities.

The DEQ has a P2 Week website featuring practices, actions, sustainability, and other applicable P2 program information at www.michigan.gov/deq, select Pollution Prevention, Government Initiatives, and P2 Week.

“...sustainability is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Thus, sustainability is about the interdependence of living organisms and communities (both human and non-human) over the long haul. Instead of seeing environmental, social and economic needs as a collection of discrete characteristics or problems sustainability looks at them as interdependent and connected. Each has an impact on and consequences for the others.”

— Terry Link, Director
Office of Campus
Sustainability, Michigan State
University

Pollution Prevention:

Recycling

Recycling is an integral component of the Department of Environmental Quality's (DEQ) pollution prevention program (P2). Tools created by the Environmental Science and Services Division, such as the Michigan Recycled Materials Market Directory and Michigan Materials Exchange Service, are on-line services available for businesses interested in diverting their waste from disposal. DEQ staff provides technical assistance to businesses, communities, and individuals by developing web sites, publications, and presentations that promote recycling. These avenues provide guidance to improve recycling efforts in Michigan.

DEQ has taken the lead in recycling efforts at state facilities. For example, DEQ recycling staff were instrumental in implementing a building-wide recycling program in Constitution Hall, Lansing, Michigan. A team of representatives from all agencies that occupy Constitution Hall (DEQ, Department of Agriculture, and an office of the Attorney General) continues to work together to put recycling, waste reduction, and energy efficiency ideas into action. This group, known as the Constitution Hall Recycling Team, was recognized for its efforts by receiving the first annual Waste Reduction Awards Program award from Ingham County in the "government category."

DEQ staff participate on the Board of the Michigan Recycling Coalition (MRC) and have worked on MRC projects such as the MRC Annual Conference. This conference provides a training opportunity for community recycling coordinators as well as business recycling officials. Hundreds of business professionals have benefited from this networking and training opportunity.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, and Recycling.



DEQ Constitution Hall Recycling Team has taken the lead in recycling efforts at state facilities.

Making Sustainability a Reality

Regional Pollution Prevention Grant Program

The Regional Pollution Prevention (P2) Grant Program provides grants, funded from the Clean Michigan Initiative, to promote innovative P2 approaches to reduce the generation of waste and critical pollutants in the state. The Environmental Science and Services Division P2 field staff provide program oversight for the grant projects. A total of \$800,000 in funding went to ten grantees to fund regional P2 projects, resulting in measurable reductions in the generation of waste. Grants were targeted at regions of the state with environmentally sensitive natural resources, such as the Lake Superior Basin and Lake St. Clair. Public and private organizations matched grant funds to implement P2 projects targeting source reduction, reuse, and recycling.

Grant project progress since implementation:

- Automotive repair shops are getting greener under the grant managed in partnership by the Flint River Watershed Coalition, the Genesee County Health Department, and University of Michigan-Flint. Through their efforts, 18 area facilities are using aqueous parts cleaning solutions rather than toxic or combustible solvents. This eliminates these sources of air emissions. In addition, most facilities prefer the “green” solutions as they are not toxic for the employees to breathe or handle.
- Central Michigan District Health Department is implementing a tire recycling demonstration project to increase public acceptability of the use of chipped tires in lieu of stone as the media for septic drain field installation. The project addresses the health risks arising out of stockpiled tires and looks at barriers and best practices in substituting recycled tires for mined stone.
- Central Lake Superior Watershed partnership in Marquette implemented a community-based P2 program for Lake Superior that provides technical assistance to businesses for reducing the storm water impacts of critical pollutants to Lake Superior. A comprehensive strategy for implementing the business education component of the project has been developed, and the storm water monitoring stations have been identified and established. In addition, the project has been featured in several public presentations and publications.



Pheromone Twist Ties are used as a mating disrupter for the Coddling Moth and Oriental Fruit Moth.

Pollution Prevention:

- The City of Detroit is implementing a Salvage Yard P2 pilot program that will work with salvage yards in Southeast Michigan to promote best management practices and P2. The Automotive Recyclers of Michigan assists the city in identifying possible sites for demonstration projects.
- Delta County and Menominee District Health Department are implementing a regional approach to reducing critical pollutants generated from medical waste. The grantees conducted a video conference which included representatives from 11 Upper Peninsula hospitals and the Upper Peninsula Health Care Network to learn about the available resources for the reduction of critical pollutants generated from medical waste.
- Northern Economic Initiatives Corporation in Marquette and fish processors in the Lake Superior Basin implemented and developed compost for specialty markets, such as greenhouse operations, bagged potting soils, and the organic growers markets. The project has began composting 15,000 pounds of fish processing waste and will provide guidance and recommendations for implementing a large-scale operation.
- Washtenaw County Division of Public Works has established the Washtenaw County Computer Recovery Program that is recovering lead, metals, mercury and plastics from computers and other related electronic devices. Through the grant, the county surveyed over 800 local businesses to assess the need for a permanent electronic equipment reuse and recycling program. The survey included an assessment on the quality of electronic equipment available for recycling/reuse. Survey results were presented at the 2002 Michigan Recycling Coalition's Annual Education Conference. As a result of the survey findings, the County established, in partnership with Recycle Ann Arbor, a drive-through drop-off station where citizens can deposit their electronic waste for recycling and de-manufacture.
- Michigan State University provided technical assistance to the apple growing industry on Integrated Pest Management (IPM) to reduce broad-spectrum insecticides by 50 percent. Eighteen commercial orchards participated in the first commercial deployment of plum curculio traps, with the goal of monitoring populations and making management decisions based on captures. Program participants have reduced the use of organophosphorous insecticide sprays for beetle control. Hand-applied and sprayable pheromone formulations are being evaluated as controls for leafrollers.
- Macomb County Public Health is implementing P2 technologies for boat maintenance and repair facilities, boatyards, and salvage yards. The county will provide technical assistance to boat maintenance and repair facility operators to reduce critical pollutants through the adoption of P2 technology and best management practices. The project includes the development of a training manual for use by operators statewide.

For additional information visit www.michigan.gov/deq, select Assistance & Support Services, Financial Assistance, and Regional P2 Grants.

Making Sustainability a Reality

Regulatory Integration of Pollution Prevention

Regulatory Integration is a means of promoting pollution prevention (P2) to businesses, industry, and municipalities utilizing the outreach potential of regulatory staff through permitting, rulemaking, compliance inspection, and enforcement program areas.

District Office P2 field staff from the Environmental Science and Services Division facilitate the integration of P2 into all Department of Environmental Quality (DEQ) programs by working with department staff and serving as a resource to provide assistance to regulated facilities. Staff accompany inspectors to facilities, contribute to proposals for Supplemental Environmental Projects (SEP) used in enforcement cases, and provide follow-up services to businesses and institutions wishing to implement P2. P2 field staff work closely with DEQ regulatory staff to provide P2 information through workshop presentations for hazardous materials management, industrial wastewater pre-treatment, and written resource materials for energy assessments, renewable energy, vehicle service and maintenance, environmentally preferred purchasing, and green buildings.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, and Regulatory Integration.

“To meaningfully consider pollution prevention in the context of sustainability, we must expand our analyses to include the full “life cycle” of the resources we produce and consume.

Society can anticipate substantial economic benefits, over both the short term and the long term, from a life cycle: approach to pollution prevention and sustainable production and consumption.

Preventing waste and byproducts from being introduced into the environment at levels that endanger ecosystems (i.e., “pollution prevention”) is as critical a part of the sustainability equation as any other.”

— Rosina M. Bierbaum, Professor
Dean of the School of Natural
Resources & Environment
University of Michigan

Pollution Prevention:

Retired Engineer Technical Assistance Program

The Retired Engineer Technical Assistance Program (RETAP) utilizes experienced, retired, technical professionals to provide on-site assessments that identify opportunities to improve process efficiency and save money. This assistance is non-regulatory, confidential, provided free of charge, and is available to Michigan businesses with less than 500 employees.

RETAP was awarded the National Pollution Prevention Roundtable Most Valuable P2 Program Award in 2003! This award-winning program continues to grow. This year, over 160 assessments were completed, surpassing program goals for a second year in a row. The successful expansion of RETAP services now includes two additional program elements: the RETAP Internship and the RETAP Technology Demonstration Program. Each program segment builds on the successes of the others. RETAP Assessors and Interns attend P2 training together, learn from national P2 experts, and continue to build relationships as mentors/students on-site at facilities. The Technology Demonstration Program enhances learning opportunities for companies and assessors by helping to fund the demonstration and the implementation of P2 technologies and providing waste/cost savings data.

RETAP recently demonstrated how the state of Michigan can benefit from practicing what it teaches to business. RETAP conducted five P2/energy efficiency assessments at state owned and leased facilities, identifying total savings of over \$250,000 annually in improved energy utilization. The implementation can generally pay for itself with the savings generated from the improvements.

The following are success stories of the RETAP assessments:

- Plastics extrusion company acting on RETAP recommendations located several outside sources who would take their scrap, vinyl-coated metal at no cost, eliminating the landfilling of 40 cubic yards each month. This company implemented one of the recommendations and doubled their coolant life. Another recommendation resulted in savings of 3.5 to 4.0 million gallons of water being pumped from the ground and sent to a seepage pond. Other recommendations by this company have resulted in a 20 percent reduction in energy (a savings of 800,000 kWh/year) at the same production rate.



RETAP was awarded the National Pollution Prevention Roundtable Most Valuable P2 Program Award in 2003. Pictured with the Award are David Herb, Elizabeth Sapio, and Dale Copedge.

Making Sustainability a Reality

- A packaging company will save \$16,000/year when they complete their electrical energy reduction plan. They are currently saving approximately 1,240,000 gallons of water annually (\$5,300 savings) through the purchase and installation of a cooling water heat exchange system.
- A carton manufacturer saved \$4,000/year by using an alternate recycler for their scrap wood and pallets. They expect to save \$6,000/year by finding an outlet for their unusable ink and empty ink cans, reducing their peak electric demand for \$2,500-5,000 annual savings, and \$3,000 reduced electrical usage in their compressed air system by implementing a preventive maintenance program.
- A leather products company realized \$15,000 per year savings by installing a filter housing and returning heated air into the plant. They reported recycling 100 percent of their plastic particulate and “millions of pounds” of coated paper stock. The company has saved \$3,000 annually by installing night setback thermostats in the office areas and \$5,000 per year by automating shutoff of cyclone motors when not in use.
- A rubber molding company is saving \$1,500/month by recycling their scrap versus landfilling (approximately 39,000 lbs./month). The company is investigating using nitrogen cooling rather than water, which may also result in quality improvements.
- A lighting manufacturer reported that many of the recommendations made by the RETAP team (in 2000) were the basis for the Environmental Management Plans that were integral to their ISO 14001 certification. They also realized a reduction in their wastes and significant cost savings, including:
 - **\$6,000/year through on-site recycling of quench oil
 - **\$6,500/year through reduction of cooling water from 19 gal./min. to 1 gal./min.
- An auto repair shop reports a 75 percent reduction in solvent usage by using a liquid distillation unit to salvage more of their solvents.
- Another auto repair shop implemented a waste reduction program and procedures to reduce solvent usage by 50 percent (mostly toluol and xylol), achieved a 60 percent reduction in volatiles by installing a preparation station for spraying volatiles, and had a net savings of 7 percent in electricity costs after installing programmable thermostats.
- An electroplater has reduced wastewater 50 percent with spray rinsing. Chemical usage in the plating baths has also been reduced.
- A commercial bakery is planning the installation of a closed loop system for reusing water that is chilled in a cooling tower. Currently, water passing through the tower is used for production and is discharged to the sewer.

For additional information visit www.michigan.gov/deq, select Assistance & Support Services, Technical Assistance, and RETAP.

Pollution Prevention:

Retired Engineer Technical Assistance Program Student Internship Program

The Retired Engineer Technical Assistance Program (RETAP) Student Internship Program provides engineering students to work on projects that integrate pollution prevention (P2) practices and technologies into existing manufacturing operations of small and medium size companies. Assistance is provided through a partnership between the Department of Environmental Quality (DEQ), participating Michigan universities, RETAP, and businesses.

This year, 13 students were awarded internships through the Internship Program. Participating interns successfully implemented cost-effective P2 and energy efficiency projects that ranged from metal and paper recycling to rinse water reduction technology. The internship program focused approximately 25 percent of the interns on agricultural projects that included: crop irrigation scheduling, manure composting, waste water and bio-solid reduction at a food processing plant, and a study to identify chlorine discharges for soft water usage at a food processor. The remaining 75 percent of the interns were placed at companies that have a variety of production processes that included: metal finishing and fabrication, corrugated board and packaging systems, and blending and repackaging operations. The following two projects are examples of the work and successes of the RETAP Internship Program:

- A senior, majoring in environmental engineering at Western Michigan University, was successful at implementing wastewater reduction technology that will save the company over \$6,200 per year, at a cost of only \$83 per year, resulting in a 3.7 day return on investment at E/M Solutions in Shelby Township, Michigan. The company also realized a reduction in chemical usage by 21 percent. The intern also proposed a system to reuse treated waste water as make-up bath solution for their zinc phosphate operation. The project has the potential to reduce water usage by 64 percent, with a projected cost-savings of \$7,600.



Thirteen engineering students work on projects that integrate P2 practices and technologies into existing manufacturing operations.

Making Sustainability a Reality

- A graduate student, majoring in environmental engineering at Michigan Technological University, implemented a new ultrasonic cleaning tank designed to remove lacquer finishes from brass instruments at Yamaha Musical Instruments in Grand Rapids, Michigan. The installation yields a 4,000 pound reduction in hazardous waste generation by removing the use of methylene chloride (a hazardous waste) from production. She also suggested a chemical substitution for sodium cyanide, which is used as a surface neutralizer. Both chemical substitutions provided a safer working environment, reduced worker exposure to hazardous chemicals, and eliminated the need to transfer hazardous chemicals off-site.

Students gained valuable P2 experience that they will be able to apply throughout their professional careers, while hosting companies benefited from the interns' efforts and enthusiasm.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Businesses, and RETAP Internship Program.

Small Business Pollution Prevention Loan Program

Small Business Pollution Prevention Loan Program provides low-interest loans up to \$100,000 to small businesses seeking to reduce waste created or generated at their facility. Loans to implement pollution prevention (P2) projects are made through shared financial participation with a business's lending institution.

Since the program's inception in 2000, over \$1,300,000 in loans have been funded to 21 small Michigan businesses. The loan portfolio is well diversified and includes dry cleaners, orthodontists, agricultural producers, as well as a metal finisher, printer, plastics manufacturer, and auto repair business. This year's newest loan was awarded to a golf course. This small business used the proceeds to replace their gas-powered, 50-unit golf cart fleet with an electric-powered fleet. The equipment will reduce the facility's consumption of gasoline, and associated air emissions, by 65 percent (4,275 gallons) and reduce motor oil use by 50 percent (100 gallons).

Small businesses who combine Retired Engineer Technical Assistance Program (RETAP) evaluations and the loan program can achieve significant results. GMA Industries of Romulus, Michigan, was able to exceed its waste reduction expectations and reduced the amount of waste it generates by 50 percent. Alpha Plastics of St. Louis, Michigan, received both a RETAP evaluation, P2 Loan, and a Tech Demo grant, and was able to totally eliminate its discharge of cooling water to the Pine River (over 21 million gallons a year), reduce the amount of solid waste produced by almost 60,000 pounds per year, reduce the amount of water used by 99 percent, and reduce its electricity usage by over 40,000 kilowatts per year.

For additional information visit www.michigan.gov/deq, select Assistance & Support Services, Financial Assistance, and Small Business P2 Loans.

Pollution Prevention:

Small Chemical Manufacturers Pollution Prevention Initiative

This initiative enhances and increases pollution prevention (P2) practices among small- and medium-size chemical manufacturers through technical assistance, technology demonstration projects, workshops, and distribution of resource information. Assistance is provided through a cooperative project between the Environmental Science and Services Division and Michigan's chemical manufacturing industry. Substantial savings have been achieved by small chemical manufacturers through P2. For example:

- Ondeo-Nalco Company, located in Jackson, Michigan, successfully reduced their annual wastewater generation and related disposal costs by 70,000 gallons and \$50,000 respectively by dedicating their returnable totes to specific product lines.
- Anderson Development Company, located in Adrian, Michigan, successfully reduced their toluene emissions by 99 percent and increased their toluene recovery by over 8,000 pounds per year by custom designing an emissions recovery unit.

This year, as part of the initiative, the Department of Chemical Engineering at Wayne State University developed four technical reports detailing 50 P2 best practices with sufficient design detail to allow small chemical manufacturers to evaluate and implement these practices within their own operations.

For additional information visit www.michigan.gov/deq, select Pollution Prevention, Initiatives for Businesses, and Small Chemical Manufacturing.

List of Participants:

- | | |
|--|-------------------------------------|
| • Access Business Group | • Michigan Chemistry Council |
| • American Institute of Chemical Engineers | • Michigan Industries of the Future |
| • Anderson Development Co. | • Oleson Consulting, Inc. |
| • ATOFINA Chemicals, Inc. | • Ondeo-Nalco Chemical Co. |
| • Dow Chemical Co. | • Pfizer Global Manufacturing |
| • DuPont Automotive | • RETAP |
| • ESCO Co. | • Solutia, Inc. |
| • Hercules Inc. | • Wacker Silicones Corp. |
| • Hemlock Semiconductor Corp. | • Wayne State University |

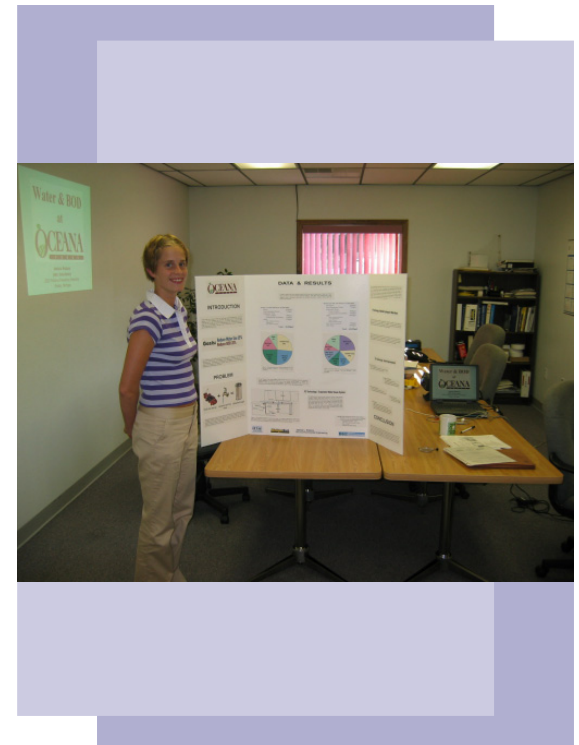
Making Sustainability a Reality

Technology Demonstration Program

The Department of Environmental Quality provided nine matching grants to qualified businesses and institutions for implementing technology demonstration projects that achieve measurable reductions in waste generation, enhance process efficiency, and improve overall business profitability. The implemented technology must be transferable and will serve as a showcase to be shared with other businesses or industries, thereby markedly accelerating the diffusion of innovative technologies within industrial sectors.

The Technology Demonstration Program was initiated in January 2003 to document and demonstrate to industry transferable pollution prevention (P2) technologies. The program's objective is to encourage greater adoption of these technologies by Michigan businesses, thereby reducing the quantity and toxicity of waste materials generated within the state. For Fiscal Year 2003, eight demonstration projects totally over \$200,000 in matching funds have been initiated with various manufacturing, service, and agricultural businesses with the anticipated benefits of reducing hazardous waste generation by 125,000 pounds per year, wastewater generation by 26,750,000 gallons per year, agricultural wastes by 615,000 pounds per year, and water and energy usage by 78,700,000 gallons and 453,000 KWh per year respectively. As the program promotes the adoption of these technologies among other Michigan businesses, significantly greater reductions will be realized.

For additional information contact the Environmental Assistance Center at 800-662-9278.



A student intern presenting summary of a project showing the company's reduction of biological oxygen demand and wastewater discharge.

Pollution Prevention:

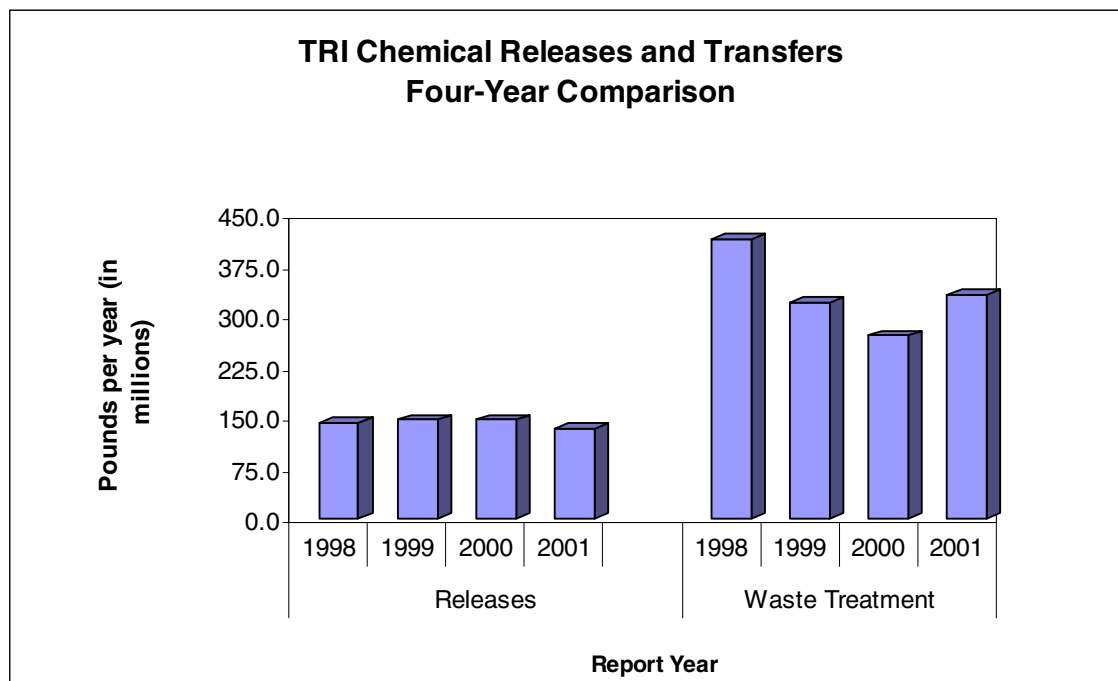
APPENDIX A:

Toxic Chemical Release Inventory (TRI) Data

The Toxic Release Inventory (TRI) chemical data presented in this report are a statewide total of the data for 1998 through 2001 and do not indicate upward or downward trends for individual pollutants or facilities. Additional information on individual pollutants and facilities, including historical information, is available on the internet at www.deq.state.mi.us/tri/.

Results for 2001, the most recent reporting year, show that chemical releases decreased from 2000. Facilities reported total on-site and off-site releases of 132 million pounds in 2001, compared to 146 million pounds in 2000.

Graph 1



Source: MDEQ SARA Title III (1/15/03)

Note: Releases include air emissions, discharges to surface waters, on-site disposal to underground injection wells or land, and transfers off-site for disposal.

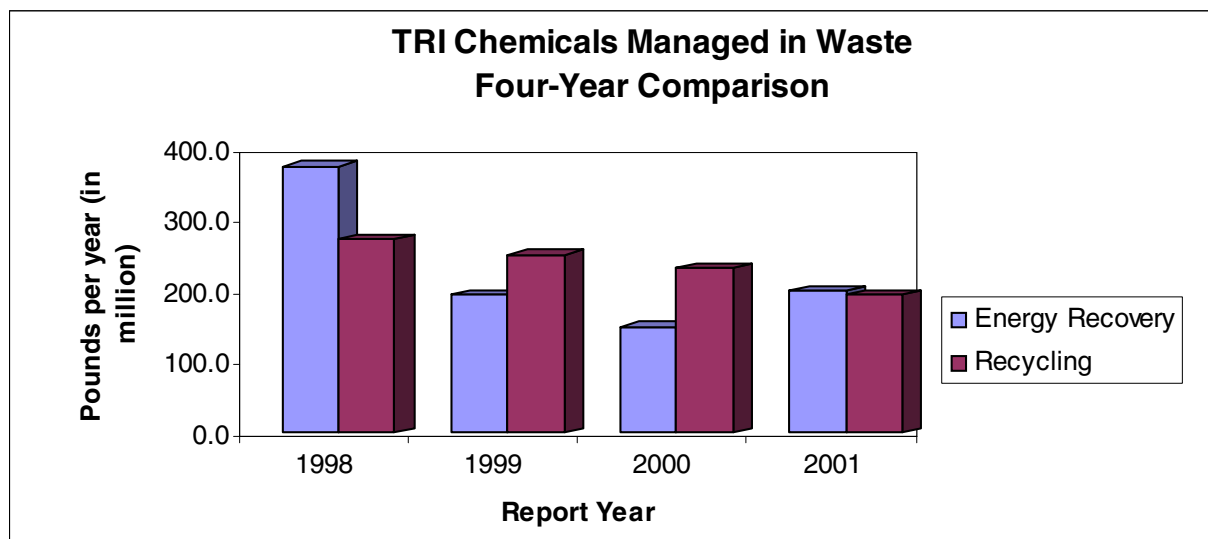
Waste treatment includes all transfers off-site for energy recovery, recycling, or waste treatment, and discharges to publicly owned treatment works.

Making Sustainability a Reality

Graph 1 shows quantities of toxic chemicals released and managed as waste that facilities reported under the TRI. In the past, the Department of Environmental Quality (DEQ) has reviewed the TRI data to determine whether the information can be used as an indicator of the progress of pollution prevention in the state. The review has focused on reductions in the amounts of TRI chemicals released annually, changes in recycling and energy recovery rates, and fluctuations in production information. Results have been difficult to assess due to the difficulty of extracting the impacts of the economy and changes in environmental legislation on TRI.

Facilities also report management of TRI chemicals in wastes both on-site and off-site. Graph 2 shows the total amount of production-related waste managed by Michigan facilities through energy recovery and recycling activities.

Graph 2



Source: MDEQ SARA Title III
(1/15/03)

Note: This represents waste used for energy recovery and recycling both on-site at facilities or transferred off-site to other locations.

The DEQ is currently assessing TRI data for reporting year 2002. This information will be available from the department in January 2004. For additional information, contact the DEQ's SARA Title III Program Office.

Pollution Prevention: Making Sustainability a Reality

APPENDIX B: Pollution Prevention Program Contact List

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Michigan Business Pollution Prevention Partnership	Jeff Spencer	517-241-5719
Michigan Clean Marina Program	Jeff Spencer	517-241-5719
Michigan Electronics Recycling Project	Lucy Doroshko	517-373-1322
Michigan Great Printers Project	Karen Edlin	517-373-0604
Michigan Household Hazardous Waste Grant Programs	Jeff Spencer	517-241-5719
Michigan Pulp Paper and Product Pollution Prevention Program	Karen Edlin	517-373-0604
Michigan Turfgrass Environmental Stewardship Program	Jeff Spencer	517-241-5719
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Regional Pollution Prevention Grant Program	Richard Alexander	231-775-3960
Regulatory Integration of Pollution Prevention	Richard Alexander	231-775-3960
Retired Engineer Technical Assistance Program	Elizabeth Sapio	517-335-0081
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Small Business P2 Loan Program	Sharon Goble	517-241-8280
Small Chemical Manufacturers Pollution Prevention Initiative	David Herb	517-241-8176
Technology Demonstration Program	David Herb	517-241-8176
Toxic Chemical Release Inventory Data	Ruth Borgelt	517-373-9804

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